

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2004/017228

International filing date (day/month/year)
12.11.2004

Priority date (day/month/year)
22.12.2003

International Patent Classification (IPC) or both national classification and IPC
F16J15/44, F04D29/16

Applicant
ABARA CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/JP2004/017228**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2004/017228

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	5, 8, 9, 12
	No: Claims	1-4, 6, 7, 10, 11, 13
Inventive step (IS)	Yes: Claims	
	No: Claims	1-13
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents cited in the application:

D1: EP-A-0 905 381 (EBARA CORP) 31 March 1999

D2: DE 19 37 418 A (BBC BROWN BOVERI & CIE) 11 February 1971

D3: EP-A-1 130 294 (GEN ELECTRIC) 5 September 2001

1. The present application does not meet the criteria of Article 33(1) PCT, because at least the subject-matter of the independent claims 1 and 10 is not new in the sense of Article 33(2) PCT.
 - 1.1. Preliminary note to clarity of claims 1 and 10:
Claims 1 and 10 are not clear (Article 6 PCT) for the following reasons:
 1. They pretend to claim a seal mechanism as such, i.e. comprising an annular seal and a housing member, but these seal mechanisms are characterised among others by reference to their use in a fluid machine (see the underlined *use* expressions in the following paragraphs) that is not part of the claimed seal mechanism. When only the technical features of the seal mechanisms are considered, these apparatus claims are not new (see paragraphs 1.2 and 1.3 hereafter). The use expressions can be included in the claims by directing them to the combination of a fluid machine with the seal mechanism (see also the **PCT International Search and Preliminary Examination Guidelines, paragraph 5.37**).
 2. The term **passage** is not clear since in the claims no specific limitations are given to it: neither in terms of technical features, nor in terms of functional features. Therefore it may include any passage of the prior art, even if it is used in a different way. A clear functional description of the passages is given in the application, page 11, lines 9-12: their shape is determined so as to allow introduction of a negative pressure of the low-pressure space into the passages so that the liner ring is brought into close contact with the upper surface of the lower plate when the pump is operated (see also the **PCT International Search and Preliminary Examination Guidelines, in Appendix to chapter 5, paragraphs A5.20[1] and A5.20[2]**).

1.2. Lack of novelty of claim 1:

The document D1 discloses all the features of this claim (the references in parentheses applying to this document), that is a seal mechanism for a fluid machine to prevent a fluid from leaking out of a high-pressure space into a low-pressure space in the fluid machine (see e.g. D1; figure 6), the seal mechanism comprising an annular seal member (160) movable in a radial direction (col. 4, lines 36-38), the annular seal member having a first surface (lower side of (160) in figure 6) on a side of the low-pressure space in the fluid machine, a housing (162) disposed between a body of the fluid machine and a rotatable member (impeller in figure 6) located inside the body of the fluid machine so as to receive the annular seal member (160), the housing (162) having a second surface (168, 170) facing the first surface of the annular seal member (160), and at least one passage (circumferential gap between 160 and 170) formed in at least one of the first surface and the second surface.

1.3. Lack of novelty of claim 10:

The document D2 discloses all the features of this claim (the references in parentheses applying to this document), that is a seal mechanism (see e.g. D2, figure 2) for a fluid machine *suitable* to prevent a fluid from leaking out of a high-pressure space into a low-pressure space in the fluid machine, the seal mechanism comprising an annular seal member (1) movable in a radial direction, the annular seal member having at least two first surfaces (4, 13) on a side of the low-pressure space in the fluid machine, and a housing disposed between a body of the fluid machine and a rotatable member (12) located inside the body of the fluid machine so as to receive the annular seal member (1), the housing having a second surface (2) facing the at least two first surfaces (4, 13) of the annular seal member (1), wherein the at least two first surfaces (4, 13) of the annular seal member (1) include a radially outward surface (4) which is brought into contact with the second surface (2) of the housing over its entire surface, and a radially inward surface (13) located radially inward of the radially outward surface (4), the radially outward surface (4) projecting from the radially inward surface (13) toward the low-pressure space in the fluid machine.

2. Dependent claims 2-9 and 11-13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see especially

documents D1, D2 and D3 and the corresponding passages cited in the search report.

3. The combination of the features of claim 5 when taking account of the note to clarity under paragraph 1.1 seems neither known from, nor rendered obvious by, the available prior art. The documents cited in the International Search Report do not give any suggestion to the skilled person to modify a seal mechanism as disclosed in D1 such as to include a plurality of radially arranged passages that do not reach an outer circumferential surface of the annular seal member, so that a negative pressure of the low-pressure space can be introduced into the passages and the liner ring brought into close contact with the upper surface of the lower plate when the pump is operated (see description page 11, lines 9-12).
4. The subject-matter of claims 1-13 can be manufactured in industry and thus looked upon as being industrially applicable.